

Remarks and Arguments

The Rejection Under 35 U.S.C. §112, Second Paragraph

The Examiner has rejected Claims 1-28 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner states that the specification does not elaborate on what is meant by the phrase "at a pressure that is sufficient to maintain the disubstituted benzene, partially oxidized disubstituted benzene, dicarboxylic acid product and solvent as a liquid or solid-liquid slurry." Claim 1 has been amended to recite the pressure range in both the first and second oxidation stages of the process. Support for this amendment can be found *inter alia* on page 8, lines 17-22 and page 9, lines 14-21 of the specification. In view of the claim amendment, Applicants respectfully submit that this rejection has been overcome and that the claim terms now fully comply with §112.

The Rejection Under 35 U.S.C. §103(a)

The Examiner has rejected Claims 1-28 under 35 U.S.C. §103(a) as being unpatentable over Housley et al. (US 2001/0007910) in view of Lewis et al. (U.S. Patent No. 3,406,196). Applicants respectfully traverse the Examiner's rejection.

Housley et al. disclose a process for producing a carboxylic acid or its ester by the oxidation of a corresponding precursor at a pressure of least 2,000 kPa (approximately 275 psig). Housley et al. also teach employing a higher pressure in the first reaction zone so that the reaction medium can be readily fed to the second reaction zone. However, there are no examples provided in Housley et al. and one skilled in the art would recognize that it is impractical, if not impossible, to operate at the recited conditions.

In contrast, Applicants' process operates at a much lower pressure and uses a lower pressure in the first oxidation stage (about 130 to about 215 psig), as well as a pump to transfer the first product mixture to the higher pressure (about 170 to about 235 psig) second oxidation stage. (See, e.g., page 8, lines 17-22 and page 9, lines 14-21 of the specification). This allows the residual oxygen from the second oxidation stage to

be recycled to the first oxidation stage without any additional processing equipment and provides for high oxygen utilization, a major advantage of Applicants' invention. Housley et al. neither teach nor suggest recycling unreacted oxygen from the second oxidation stage to the first oxidation stage to obtain high oxygen utilization.

Lewis et al. disclose a process which calls for introducing the total amount of the feed mixture into a first oxidation stage and affirmatively teach away from the claimed invention. In fact, in col. 5, lines 34-52, Lewis et al. clearly teach the disadvantage of allowing any of the feed mixture to enter the second stage of the reactor and suggest that if the polyalkyl aromatic content fed to the second stage exceeds about 5%, a separate step should be used to remove the feed mixture to prevent appreciable losses of the feed mixture from occurring. Thus, unlike Applicants' invention, Lewis et al. neither teach nor suggest a process whereby a portion or all of the total amount of the feed mixture is introduced into a second oxidation stage.

Accordingly, there would be no incentive for one skilled in the art to combine the references because incorporating the teachings of Lewis et al. into the Housley et al. process would not result in Applicants' inventive process which introduces at least a portion of the feed mixture from the first oxidation stage into a higher pressure second oxidation stage, and then recycles unreacted oxygen from the second oxidation stage to the first oxidation stage to achieve high oxygen utilization.

Conclusion

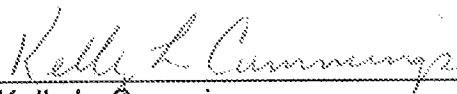
The Applicants respectfully request that the Examiner consider the foregoing arguments and amendments. Applicants submit that the subject claims are now in condition for allowance and respectfully request allowance of these claims.

If the Examiner again rejects these claims, he is respectfully requested to call Applicants' attorney before issuing the rejection so that the patentable nature of the invention may be further discussed.

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Respectfully submitted,

Customer No. 04249
Correspondence Address:
BP America Inc.
Docket Clerk, BP Legal, M.C. 5 East
4101 Winfield Road
Warrenville, Illinois 60555



Kelly L. Cummings
Attorney for the Applicants
Registration Number 39,646
(630) 821-2452